

CLAIMS

We claim:

- 5 1. A composition comprising a transposon-based vector comprising :
- a) a gene operably linked to a first promoter, the gene encoding
 for a bacterial transposase; and,
- b) one or more genes of interest operably-linked to one or more
 additional promoters,
- 10 wherein the one or more genes of interest and their operably-linked
 promoters are flanked by transposase insertion sequences recognized by the
 bacterial transposase, wherein the first promoter and the one or more
 additional promoters are cell-specific promoters or constitutive promoters.
- 15 2. The transposon-based vector of claim 1, further comprising an isolated
 polyA nucleotide sequence located 3' to the one or more genes of interest.
3. The isolated polyA nucleotide sequence of claim 2, wherein the
 isolated polyA nucleotide sequence is optimized for production of a protein,
20 peptide or nucleic acid encoded by the one or more genes of interest.
4. The transposon-based vector of claim 1, wherein the one or more genes
 of interest code for a protein, a peptide or a nucleic acid.
- 25 5. The transposon-based vector of claim 1, wherein the one or more gene
 of interest encodes for a nucleic acid which inhibits transcription.
6. A composition comprising an isolated polynucleotide sequence
 comprising:
- 30 a) one or more genes of interest operably-linked to one or more
 promoters;
- b) a poly A nucleotide sequence located 3' to the one or more genes of
 interest; and,

c) transposase insertion sequences recognized by a bacterial transposase,

wherein the one or more genes of interest and their operably-linked promoters are flanked by the transposase insertion sequences and the one or more additional promoters are cell-specific promoters or constitutive promoters.

7. The isolated polynucleotide sequence of claim 6, wherein the one or more genes of interest code for a protein, a peptide or a nucleic acid.

8. An animal or a human comprising the isolated polynucleotide sequence of claim 6.

9. The animal of claim 8, wherein the animal is a bird or a mammal.

10. An egg produced by the bird of claim 9.

11. Milk produced by the mammal of claim 9.

12. A cell comprising the isolated polynucleotide sequence of claim 6.

13. A method of providing gene therapy to an animal or a human comprising administering to the animal or the human the transposon-based vector of Claim 1.

14. The method of claim 13, wherein the one or more additional promoter is a cell specific promoter.

15. The method of claim 13, wherein the gene of interest codes for production of a protein, peptide or nucleic acid.

16. The method of claim 13, further comprising a polyA sequence located 3' to the one or more genes of interest.

17. The method of claim 13, wherein the gene therapy comprises production of a protein, peptide or nucleic acid encoded by the one or more genes of interest in the animal or the human.

5 18. The method of claim 13, wherein the administration is effective to treat a disease or a condition.

19. The method of claim 13, wherein the administration of the transposon-based vector results in a transfection rate of at least 40%.

10 20. The method of claim 13, wherein the administration occurs through the vascular system.

21. An animal produced by the method of claim 13.

15 22. Use of the composition of any one of claims 1-7, in the preparation of a medicament useful for providing gene therapy to an animal or human following administration of an effective amount of the composition to the animal or the human.

20 23. The use of claim 22, wherein the gene therapy treats a disease or a condition in the animal or the human.